

1

ABSTRACT

2 A process automation application, referred to as a commerce exchange server,
3 for sending transaction messages between application programs uses a transaction
4 definition data structure for specifying the component operations and processing logic
5 that comprise the transaction. The data structure specifies one or more operations that
6 constitute the transaction, instructions for producing the input data needed for each
7 operation, and conditional logic for specifying constraints on the sequence of
8 operation execution. The conditional logic may include one or more expressions,
9 ranging from simple to complex, including variables, math operations and functions,
10 that are evaluated using the inputs or outputs of one or more prior operations to
11 determine execution order of subsequent operations. The transaction definition data
12 structure may also provide for broadcast operations and for conditioning the success of
13 their execution. In an illustrated implementation, the transaction definition data
14 structure is an XML (Extensible Markup Language) document in the form of a
15 directed acyclic graph (DAG). A transaction service architecture provides for storing
16 transaction definitions that define specific types or categories of transactions in a
17 transaction database, and for matching a transaction definition to a transaction
18 definition identifier from a requesting application. The transaction service then builds
19 a transaction instance DAG to perform the transaction, produces the messages needed
20 for performing the transaction, and manages the message flow to and from the service
21 applications that perform the constituent operations of the transaction.